L 27395-65 EWG(j)/EWA(k)/FBD/EWT(1)/EEC(k)-2/EEC(t)/T/EEC(b)-2/EWP(k)/EWA(h)/EWA(m)-2 Pf-4/Pi-4/Pl-4/Pn-4/Po-4/Peb IJP(c) WG

ACCESSION NR: AP5005356 S/0109/65/010/002/0370/0371

AUTHOR: Kalomnikov, Yu. D.; Troitskiy, Yu. V.; Chebotayev, V. P.

56
42
B

TITLE: Plane-parallel glass plate in the cavity of a laser 25

SOURCE: Radiotekhnika i elektronika, v. 10, no. 2, 1965, 370—371

TOPIC TAGS: laser, helium neon laser, laser equipment

ABSTRACT: The dependence of laser power on the angle of incidence of rays on a plane-parallel glass plate placed in the cavity has been investigated. The purpose of the investigation was to examine the possibility of using plane-parallel glass plates in laser cavities to tune out concurrent generation on other wavelengths. The experimental setup is shown in Fig. 1 of Enclosure. An He-Ne laser operating at 1.152 μ was used. In the laser cavity spherical mirror 1 (curvature radius, 4 m) and plane mirror 2 were spaced 2m apart. The discharge tube (3) was 10mm in diameter; discharge length was 10cm. Diaphragm 4 served to suppress all except longitudinal oscillations. Plane-parallel glass plate 5 was placed in the cavity at right angles to the axis of the system. Radiated power was measured with photocell 6. At a plate angle $\varphi = 0$, lasing occurred; at angle of 1—1.5' from the perpendicular, lasing did not occur. As the plate was rotated, lasing modes

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L 27395-65

ACCESSION NR: AP5005356

again appeared, at successively closer spacing and declining power. For a plate 9 mm thick, as many as 50 modes were observed during rotation of the plate 6—7°. A portion of the modes is shown in Fig. 2. Radiated power was measured with photocell 6. At a plate angle $\varphi = 0$, lasing occurred; at an angle of 1—1.5' from the perpendicular lasing did not occur. With rotation of the plate, lasing modes again appeared at successively closer spacing and decreased power. For a plate 9 mm thick, up to 50 modes were observed, corresponding to rotation of $\varphi = 6—7°$ (Fig. 2). Orig. art. has: 2 figures.

ASSOCIATION: none [DW]

SUBMITTED: 10Aug63 ENCLOSURE: 02 SUB CODE: EC

NO REF SOV: 001 OTHER: 001 ATD PRESS: 3192

Card 2/4

L 26606-65 EWG(j)/EWA(k)/FBD/EWT(l)/EWT(m)/EPF(c)/EEC(k)-2/EPF(n)-2/EPR/EEC(t)/T/EWP(t)/EEC(b)-2/EWP(k)/EWP(b)/EWA(m)-2/EWA(h) Pn-4/Po-4/Pf-4/Pr-4/Ps-4/Peb/Pi-4/
ACCESSION NR: AP5005357 Pu-4/Pl-4 IJP(c) S/0109/65/010/002/0372/0373 WG/JD

AUTHOR: Chebotayev, V. P.

TITLE: On a mode of operation of He-Ne lasers

SOURCE: Radiotekhnika i elektronika, v. 10, no. 2, 1965, 372-373

TOPIC TAGS: laser, helium neon laser, hollow cathode laser, hollow cathode discharge

ABSTRACT: He-Ne lasers with hollow-cathode discharge were investigated for the purpose of determining the optimal discharge conditions. The hollow cathode was 1.3 cm in diameter and 11 cm in useful length. Line intensities were measured with a monochromator and a grating spectrograph. Curves of line intensity versus helium pressure were plotted for the 6328 Å ($3s_2 - 2p_4$), 11523 Å ($2s_2 - 2p_4$), and 6096 Å ($2p_4 - 1s_4$) lines. Maximum intensities of 6328 Å (0.2 mm Hg) and 11523 Å (3.5 mm Hg) corresponded well with the generation modes of the laser on these lines. For generation of 11523 Å, the laser was equipped with flat interference mirrors (transmission coefficient, 0.1-0.5%) spaced about 2000 mm apart. For more uniform distribution of the discharge, anodes were placed every 15 cm along the cathode. The discharge was excited along a length of 80-90 cm. Generation

Card 1/2

L 26606-65
ACCESSION NR: AP5005357

began at He pressure of 1.2 mm Hg, and maximum generation power was observed at 3.5 mm Hg. For generation of 6328 Å, the laser utilized spherical interference mirrors with a curvature radius of 2000 mm. The distance between the mirrors was about the same. During operation on the red line, the length of the discharge was increased to 130 cm by the addition of three anodes. Laser output power was measured in relative units on the basis of photocell current. Curves of output power versus discharge current at He pressure of 0.2 mm Hg and Ne pressure of 0.08 mm Hg were plotted. Orig. art. has: 4 figures. [DW]

ASSOCIATION: none

SUBMITTED: 028ep63 ENCLOSURE: 00 SUB CODE: EC

NO REF SOV: 001 OTHER: 003 ATD PRESS: 3188

Card 2/2

L 31324-65 EWG(j)/EWA(k)/FBD/EWT(1)/EWT(m)/EEC(k)-2/EEC(t)/T/EWP(t)/EEC(b)-2/EWP(k)/EWP(b)/EWA(m)-2/EWA(h) Pn-4/Po-4/Pf-4/Peb/Pi-4/Pl-4 IJP(c) WG/JD

ACCESSION NR: AP5005358 S/0109/65/010/002/0374/0376

AUTHOR: Chebotayev, V. P.

TITLE: Influence of hydrogen and oxygen on Ne laser operation 63 B

SOURCE: Radiotekhnika i elektronika, v. 10, no. 2, 1965, 374-376

TOPIC TAGS: laser, neon laser, neon hydrogen laser, neon oxygen laser, helium neon laser

ABSTRACT: The destruction of metastable neon atoms by hydrogen and oxygen molecules in laser operation was investigated. The hollow-cathode kovar discharge tube measured 170 cm in length, 1.3 cm in internal diameter, and 0.9 cm in plate aperture diameter. During operation, the tube was water-cooled. The plates of the cathode were spaced 15 cm apart, and the 400-cm laser cavity was formed by 13-layer interference mirrors. The addition of hydrogen resulted in increased optimum pressure of neon and increased output power. The latter was the result of a decrease in the population of 2p neon levels caused by the decrease of metastable Ne atoms. Destruction of metastable Ne atoms by oxygen occurred as the result of the dissociation of oxygen molecules

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L 31324-65
ACCESSION NR: AP5005358

into excited atoms. This phenomenon was utilized to obtain population inversion between oxygen atom levels. At low current densities, He-Ne laser power exceeded that of Ne-H_2 lasers, and the populations of 2s levels of He-Ne exceeded those of Ne-H_2 mixtures. Saturation occurred at 7μamp/cm^2 in the former, and 30μamp/cm^2 in the latter. Orig. art. has: 2 figures and 1 table. [DW]

ASSOCIATION: none

SUBMITTED: 18Sep63 ENCL: 00 SUB CODE: EC

NO REF SOV: 003 OTHER: 006 ATD PRESS: 3201

Card 2/2

L 53822-65 EWA(k)/FBD/EWG(r)/EWT(l)/EWT(m)/EPF(c)/EEC(k)-2/EEC(t)/T/EWP(t)/EWP(k)/EEC(b)-2/EWP(b)/EWA(m)-2/EWA(h) Pm-4/Pn-4/Po-4/Pf-4/Pr-4/Peb/Pi-4/WG/JD SCTB/IJP(c)

ACCESSION NR: AP5013353 UR/0109/65/010/005/0958/0960
621.378.335

AUTHOR: Chebotayev, V. P.; Pokasov, V. V.

71
B

TITLE: Operation of a He-Ne laser with hollow-cathode discharge

SOURCE: Radiotekhnika i elektronika, v. 10, no. 5, 1965, 958-960

TOPIC TAGS: helium neon laser, hollow cathode discharge, water cooled laser, confocal resonator, laser

ABSTRACT: A study was made of the dependence of the output power of a He-Ne laser with a hollow cathode on discharge parameters, i.e., composition of the mixture, discharge current, and diameter of the discharge tube for several lines corresponding to 2s-2p neon transitions. The experiments were conducted with water-cooled discharge tubes 160 cm long with inner diameters of 13 and 29 mm. In experiments with the 13-mm tube, a confocal resonator formed by a pair of inner spherical mirrors was used. Laser emission was observed in pure neon simultaneously at the following four lines: 11,143 Å ($2s_4$—$2p_8$), 11,523 Å ($2s_2$—$2p_4$), 11,525 Å ($2s_4$—$2p_7$), and 11,767 Å ($2s_2$—$2p_2$). The optimum neon pressure at which these lines occurred was 5×10^{-2} mm Hg. The relationship of output power at

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L 53822-65

ACCESSION NR: AP5013353

11,523 Å and 11,143 Å to cathode current density for two values of neon pressure (5×10^{-2} mm Hg, 0.1 mm Hg) is plotted in Fig. 1 of the Enclosure. Emission in the He-Ne mixture was observed as the neon pressure was varied between 0.03 and 0.4 mm Hg. At the same time, changes in the optimum helium pressure were negligible. Under near-optimum conditions (p_{Ne} = 0.15 mm Hg, p_{He} = 4.5 mm Hg) in a thoroughly degassed tube, laser emission was observed at the following five lines: 11,523 Å, 11,614 Å ($2s_3 - 2p_5$), 11,770 Å, 11,985 Å ($2s_3 - 2p_2$), and 12,066 Å ($2s_5 - 2p_6$). In experiments with the 29-mm discharge tube, a resonator formed by a spherical and a plane mirror was employed. The dependence of the laser output power on helium pressure at 11,523 Å for two values of neon pressure (0.1 mm Hg, 0.15 mm Hg) and a cathode current density of 2 mamp/cm^2 is shown in Fig. 2. The optimum helium pressure for the 29-mm tube was about 2 mm Hg, which is about half as much as that of the 13-mm tube. Orig. art. has: 5 figures. [JR]

ASSOCIATION: none

SUBMITTED: 22Feb64 ENCL: 02 SUB CODE: EC

NO REF SOV: 002 OTHER: 001 ATD PRESS: 4022

Card 2/4

VASILENKO, L.S.; CHEBOTAYEV, V.P.; TROITSKIY, Yu.V.

Visual observation of infrared radiation from a laser.
Zhur. eksp. i teor. fiz. 48 no.3:777-778 Mr '65.

(MIRA 18:6)

1. Institut radiofiziki i elektroniki Sibirskogo otdeleniya AN SSSR.

L 54601-65 EWA(k)/FBD/EWG(r)/EWT(l)/EWT(m)/EPF(c)/EEC(k)-2/EPF(n)-2/EPR/
EEC(t)/T/EWP(t)/EEC(b)-2/EWP(k)/EWP(b)/EWA(m)-2/EWA(h) Pm-4/Pn-4/Po-4/Pf-4/Px-4/
Ps-4/Peb/Pi-4/Pu-4/Pl-4 SCTB/IJP(c) WG/JD

ACCESSION NR: AP5008731 S/0056/65/048/003/0779/0781

AUTHOR: Chebotayev, V. P.; Vasilenko, L. S.

TITLE: Study of a neon-hydrogen laser at high discharge currents

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 48, no. 3, 1965, 779-781

TOPIC TAGS: gas laser, laser emission, laser output, neon laser, hydrogen laser, laser

ABSTRACT: The radiation spectrum of a neon-hydrogen laser is analyzed where current densities in the cathode cavity are 170-260 ma/cm^2. A 7.5-cm stainless steel discharge tube with an internal diameter of 1 cm was used. Interference mirrors with a radius of curvature of 100 cm and maximum reflection in the 1.1-μ region were set up 60 cm apart. Isolated pulses of radiation from the laser were analyzed. The discharge time constant was 5-10 milliseconds. A spectrograph with a Zeiss diffraction grating was used for recording the radiation. Oscillographs show the output power at 11143 Å as a function of the discharge current for various neon and hydrogen pressure ratios. It was found that saturation for gas pressures close to optimum is reached at a current of 4-6 amp. When the

Card 1/3

L 54601-65

ACCESSION NR: AP5008731

2

active discharge length was increased to 15 cm under the same discharge conditions, generation was observed at five lines in the 2s-2p transition series for neon: 11143, 11177, 11523, 11525 and 11789 Å. A generator with an active discharge length of 300 cm was designed to produce generation at as many lines as possible. The resonator was made with external spherical mirrors having a radius of curvature of 400 cm and set up at a distance of about 400 cm. At neon and hydrogen pressures close to maximum (0.8 mm Hg for both gases), generation was observed at the lines shown in Table 1 of the Enclosure. Generation was apparently obtained for the first time at the lines marked by asterisks. "In conclusion, the authors thank Yu. V. Troitskiy for his interest in the work." Orig. art. has: 3 figures and 1 table. [14]

ASSOCIATION: Institut radiofiziki i elektroniki Sibirskogo otdeleniya Akademii nauk SSSR (Institute of Radiophysics and Electronics, Siberian Department of the Academy of Sciences, SSSR)

SUBMITTED: 20Mar64 ENCL: 01 SUB CODE: EC

NO REF SOV: 001 OTHER: 001 ATD PRESS: 3242

Card 2/3

L 54601-65
ACCESSION NR: AP5008731

ENCLOSURE: 01

Table 1. Neon lines at which generation was observed in a neon-hydrogen mixture

	$2s_2$	$2s_4$	$2s_5$		$2p_1$	$2s_4'$	$2s_5$
$2p_1$				$2p_3$		11789,1	12066
$2p_2$	11767		13912*	$2p_7$		11525	
$2p_3$		12889*		$2p_8$		11143	11390
$2p_4$	11523	12594*	12912*	$2p_9$			11177
$2p_5$	11409	12459*	12767*	$2p_{10}$		9486*	9865*

Card 3/3

L 1414-66 EWA(k)/FBD/EWT(1)/EEC(k)-2/T/EWP(k)/EWA(m)-2/EWA(h) SCTB/IJP(c) WG/GG

ACCESSION NR: AP5021357 UR/0120/65/000/004/0178/0179

621.373:620.179.18

AUTHORS: Chebotayev, V. P.; Lisitsin, V. N.

TITLE: Investigating the optical properties of crystals by means of a gas laser

SOURCE: Pribory i tekhnika eksperimenta, no. 4, 1965, 178-179

TOPIC TAGS: gas laser, optical crystal, interferometer, laser

ABSTRACT: This is a brief discussion of a method of studying the optical properties of crystals by means of a gas laser. In this study crystals of ruby 50 and 120 mm long were investigated by an HeNe gas laser operating at a wavelength of 6328 Å. The laser had internally convex mirrors with radius of curvature of 2 m spaced about 2 m apart, as illustrated by Fig. 1 of the Enclosure. The interference pattern may be observed directly on the screen or reproduced photographically on the film. For focusing the rays on the film, lenses with focal distances of 470 and 230 mm were used for the 120- and 50-mm crystals, respectively. Photographs of interference rings were obtained for both crystals, and it is concluded that the technique is satisfactory for studying

Card 1/3

ACCESSION NR: AP5021357

3

crystals and glass having no substantial absorption of the wavelength generated by the laser. Orig. art. has: 2 figures. [04]

ASSOCIATION: Institut radiofiziki i elektroniki SO AN SSSR, Novosibirsk (Institute of Radio Physics and Electronics, SO AN SSSR) 44,55

SUBMITTED: 20Feb64 ENCL: 01 SUB CODE: SS, EC

NO REF SOV: 001 OTHER: 002 ATD PRESS: 4100

Card 2/3

L 1414-66

ACCESSION NR: AP5021357 ENCLOSURE: 01

0

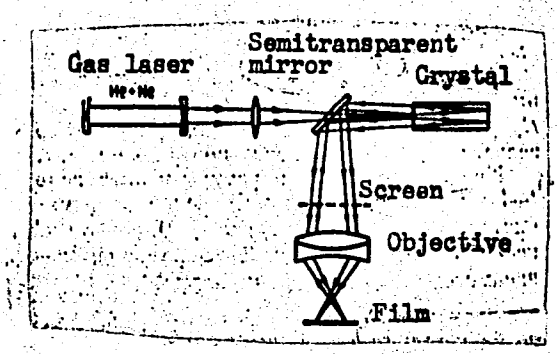

Fig. 1. Setup for studying interference phenomena in crystals by means of a gas laser

Card 3/3 DP

ACC NR: AR6000111 SOURCE CODE: UR/0058/65/000/008/D023/D023

SOURCE: Ref. zh. Fizika, Abs. 8D180

AUTHOR: Chebotayev, V. P. 44,55

ORG: none

TITLE: Excitation of argon 27 ions by metastable helium 27 atoms

CITED SOURCE: Tr. Komis. po spektroskopii. AN SSSR, t. 2, vyp. 1, 1964, 263-272

TOPIC TAGS: argon, helium, spectral line, gas discharge spectroscopy, light excitation, particle collision, pressure effect, excitation cross section 21,44,55

TRANSLATION: The author investigated the excitation of 16 spark lines of argon in a discharge in a hollow cathode in a helium-argon mixture. The intensity of some spark lines of argon was increased as the result of inelastic collisions between the argon ions and the metastable helium atoms by 15--20 times over the intensity of the comparison line. The dependence of the intensity of the spark lines of argon on the partial pressures of the argon and helium, on the discharge current density, on the electron temperature, on the electron concentration, and on the metastable helium atoms was measured. Estimates are given of the absolute effective cross sections for the transfer of excitation from the metastable helium atoms to the argon ions.

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 000/ OTH REF: 000

Card 1/1 nda

87
13

ACC NR: AP6007020 SOURCE CODE: UR/0051/66/020/002/0362/0364

AUTHOR: Troitskiy, Yu. V.; Chebotayev, V. P.

ORG: none

TITLE: Distribution of population inversion across an He-Ne laser discharge

SOURCE: Optika i spektroskopiya, v. 20, no. 2, 1966, 362-364

TOPIC TAGS: gas laser, gas discharge, laser amplification, cascade, pressure effect

ABSTRACT: The authors measured the radial dependence of the coefficient of unsaturated amplification for a helium-neon laser at 11,523 Å in a discharge tube 18.2 mm in diameter and 20 cm in length. The ratio of the neon to helium pressures was 1:10. Different discharge currents and total gas pressures were used. The test procedure and apparatus are briefly described. The results show that the gain falls off sharply away from the axis of the discharge tube towards the sides. This fall-off depends only slightly on the discharge current, but the gain increases monotonically with the current. The radial dependence of the gain is well approximated by a zero-order Bessel function with its zero approximately 1--1.3 mm from the walls of the tube. The optimal pressure was close to 1 mm Hg. When the pressure was increased to 2 mm, the radial distribution was similar, but the gain decreased. An increase of the pressure to 3 mm produced a pronounced change in the shape of the curve. The gain decreased rather than increased, and the curve became flatter. Further increase in the pressure caused the gain to disappear and absorption to set in. This effect

Card 1/2

UDC: 621.375.9.

ACC NR: AP6007020

is due to saturation of the concentration of the metastable helium atoms as the current increases and to an increasing role of cascade processes. The authors thank V. V. Reshetnikov for help with the work. Orig. art. has: 2 figures.

SUB CODE: 20/ SUBM DATE: 14Jun65/ ORIG REF: 001/ OTH REF: 001

Card 2/2

L 27731-66 EWT(1) WG

ACC NR: AP6013033 SOURCE CODE: UR/0051/66/020/004/0734/0736

57
55
B

AUTHOR: Lisitsyn, V. N.; Chebotayev, V. P.

ORG: none

TITLE: Excitation of helium levels by optical pumping

SOURCE: Optika i spektroskopiya, v. 20, no. 4, 1966, 734-736

TOPIC TAGS: gas laser, helium, metastable state, laser pump, spectral line, line intensity, light absorption

ABSTRACT: The authors present the results of investigations aimed at obtaining population inversion in a helium discharge by optical pumping. Helium was chosen because of the large separation between its spectral lines. The experimental setup consisted of a discharge tube and two pump lamps with an optional liquid filter between them. The tests were made at the optimal conditions (pressure 0.2 mm Hg, discharge current 60 ma) for the population inversion of the levels $3^1P - 3^1D$ ($\lambda = 95\ \mu$). Application of the pump light (discharge current through pump tubes 600 ma) increased the population of the 3^1P approximately fourfold. With increasing gas pressure, the population of the 3^1P level decreased. The intensity of the 5015 Å ($3^1P - 2^1S$) line was found to vary with increasing helium pressure in the discharge like the concentration of the metastable 2^1S helium atoms. Use of a liquid $CuSO_4$ filter increased the population inversion. An increase in the absorption of the 6678 and 5875 Å lines was observed as a result of optical pumping, thus evidencing an appreciable increase of the 2^1P and 2^3P levels. Other effects of optical pumping,

UDC: 621.375.9: 535 + 537.523/.527

Card 1/2

L 27731-66

ACC NR: AP6013033

2

which may be of use in the development of gas lasers, are also mentioned. The authors thank I. M. Beterov for participating in the experiment and discussing the results, and G. A. Milushkin for help with the work. Orig. art. has: 1 figure. [02]

SUB CODE: 20/ SUBM DATE: 14Jun65/ OTH REF: 003/ ATD PRESS: 5081

Card 2/2 BLG

L 47573-66 EEC(k)-2/EWP(k)/EWI(1)/EWT(m)/T/EWP(t)/ETI IJP(c) WG/JD

ACC NR: AP6032450 SOURCE CODE: UR/0368/66/005/003/0388/0390

AUTHOR: Donin, V. I.; Klement'yev, V. M.; Chebotayev, V. P. 61 B

ORG: none

TITLE: A high-current argon laser 27

SOURCE: Zhurnal prikladnoy spektroskopii, v. 5, no. 3, 1966, 388-390

TOPIC TAGS: gas laser, argon laser, high intensity laser, laser r and d

ABSTRACT: A cw high-current argon laser 25 which features a metallic discharge tube and cathode is described (see Fig. 1). The cathode was developed at the authors' Laboratory [probably at the Institute of Semiconductors, Novosibirsk] in the course of work on arc discharges in the hollow metallic tube in low-pressure saturated metal vapor. The discharge tube consists of various oxidized Duralumin disks, which are insulated from each other by rubber spacers and slots (total thickness 1 mm) and are cooled with ordinary (non-distilled) water. The cathode and discharge tube are arranged axisymmetrically. The active length of discharge tube is 17.5 cm and its working diameter 2.5 mm. The tube is terminated with Brewster angle windows. The cavity consists of two spherical mirrors (R = 1.3 m) with multilayer dielectric coatings. The mirrors (92.4% and 99.1% reflective) are placed approximately 60 cm from each other. Laser action at discharge voltages of 125 v and currents of 45 amp was observed, although the cathode is capable of sustaining unlimited currents

Card 1/2 UDC: 621.375.9

L 47573-66

ACC NR: AP6032450

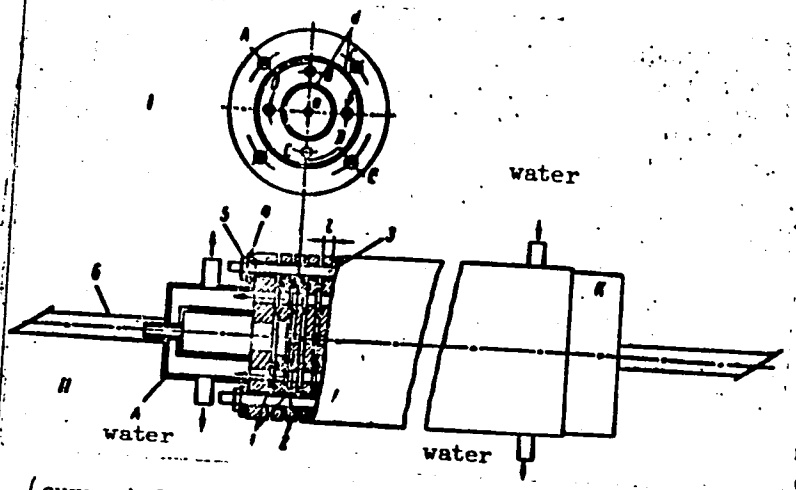

Fig. 1. Sketch of individual disks (I) and discharge tube (II)

a - Operating aperture; b - cooling water inlet; c - holes for tie bolts; d - under rubber spacers; A - anode; K - cathode; 1 - rubber spacers; 2 - disks; 3 - tie bolts with insulation; 4 - insulating ring; 5 - tie bolt nuts; 6 - glass tube with output windows.

(current densities of approximately 1000 amp/cm^2 were attained). The argon gas pressure was 0.2—0.5 mm Hg. The threshold current for the strongest Ar II line (4880 Å) was 7 amp. The maximum output power at 45 amp was about one-half watt. The effect of an external magnetic field on the output power was investigated at a discharge current of 20 amp. Suitable selection of the field resulted in a six-to sevenfold increase in the output power. Orig. art. has: 2 figures. [YK]

SUB CODE: 20/ SUBM DATE: 18Jan66/ ORIG REF: 001/ OTH REF: 001/ ATD PRESS: 5093

Card 2/2

L 27377-66 FBD/EWT(1)/EWT(m)/EEC(k)-2/T/EWP(k)/EWA(h) IJP(c) WG/JD

ACC NR: AP6015439 SOURCE CODE: UR/0051/66/020/005/0915/0916

AUTHOR: Vasilenko, L. S.; Chebotayev, V. P.

ORG: none

TITLE: Transition competition and the generation of the 6401 Å line in the absence of a dispersing prism in the cavity of an He-Ne laser

SOURCE: Optika i spektroskopiya, v. 20, no. 5, 1966, 915-916

TOPIC TAGS: gas laser, laser

ABSTRACT: The dependence of the amplification on the active length of an He-Ne laser equipped with Brewster angle mirrors was investigated using a discharge tube with a 3.7 mm inner diameter in which the discharge length (l) could be varied between 20 and 140 cm. The increased amplification due to greater tube length l could be compensated by increasing the attenuation in the laser. This was achieved by rotating a glass plate mounted in the cavity relative to the axis perpendicular to the polarization. It was established that amplification obtained just above the threshold (G) for oscillation varied linearly with the discharge length, reaching saturation at l = 120 cm. Replacement of one of the dielectric mirrors with a silver mirror (equivalent to increasing the Q of the cavity on the 3.39 μ line) lowered the value of l at which saturation occurred. When a prism was placed in the cavity, G varied linearly with (l) throughout the whole range of l = 20—140 cm (lack of saturation), indicating

Card 1/2 UDC: 621.375.9:535

L 27377-66

ACC NR: AP6015439

that saturation achieved without a prism is associated with oscillations on the 3.39 μ line. The linear dependence of G on 1 and therefore the absence of oscillations on other transitions was attributed to depletion of the $3s_2$ level due to oscillation on the 6328 A line. An attempt was made to attain laser action on other transitions by using a quartz plate in the cavity to suppress oscillations on the 6328 Å line. Rotation of the quartz plate for a few minutes made it possible to attain laser action on both the 6328 and 6401 Å lines. Orig. art. has: 1 figure. [CS]

SUB CODE: 20/ SUBM DATE: 24Sep65/ ORIG REF: 001/ OTH REF: 002/ ATD PRESS: 4259

Card 2/2

L 28373-66 EEC(k)-2/EWA(h)/EWP(k)/EWT(l)/EWT(m)/FBD/T/EWP(t)/ETI IJP(c) WG/JD

ACC NR: AP6012851 SOURCE CODE: UR/0368/66/004/004/0302/0305

AUTHOR: Beterov, I. M.; Chebotayev, V. P.

ORG: none

TITLE: Influence of optical pumping of metastable helium atoms on the operation of a helium-neon laser

SOURCE: Zhurnal prikladnoy spektroskopii, v. 4, no. 4, 1966, 302-305

TOPIC TAGS: gas laser, laser pumping, helium, neon, light excitation, metastable state, gas discharge

ABSTRACT: The authors describe an experiment aimed at demonstrating that the population inversion in He-Ne lasers is brought about by transfering the excitation energy from the metastable 2^3S helium atoms to the neon atoms in s-state. To this end, the population of the upper helium levels was reduced by optically pumping such a laser (lines 11523 and 11614 Å) with light from a helium discharge (20 ma, 2 mm Hg). The decrease in laser power due to the application of the pump pulse was determined by producing a similar power decrease with the aid of a glass plate placed in the laser cavity. From the equality of the loss, the relations are deduced for the dependence of the relative loss on the total loss, on the field density, and on the discharge current, and for the dependence of the mean lifetime of the metastable 2^3S helium atoms on the discharge current. Orig. art. has: 3 figures and 11 formulas. [02]

SUB CODE: 20/ SUBM DATE: 12May65/ ORIG REF: 001/ OTH REF: 001/ ATD PRESS: 4262

Card 1/1 cc UDC: 621.375.9

L 31508-66 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6013036 SOURCE CODE: UR/0051/66/020/004/0740/0742

AUTHOR: Donin, V. I.; Chebotayev, V. P. 50 B

ORG: none

TITLE: Determination of the population of the $2s_2$ level and the probability of the $2s_2$-$2p_4$ transition in neon [Reported at the Symposium on the Intensity and Contour Shape of Spectral Lines, Krasnoyars, July, 1964]

SOURCE: Optika i spektroskopiya, v. 20, no. 4, 1966, 740-742

TOPIC TAGS: neon, optic transition, absorption coefficient, gas discharge spectroscopy, transition probability

ABSTRACT: The authors describe a method of measuring transition probabilities and level population of one of the levels corresponding to a given transition from the known population of the other level and from the known absorption coefficient. The method is based on a known relation between the absorption coefficient for the center of a Doppler line and the level population. The measurements were made in a dc discharge produced in a He-Ne mixture in a tube of 6.5 mm diameter. The absorption coefficients of the 11522.8 Å line ($2s_2$-$2p_4$ transition) were measured as a function of the discharge current. To eliminate the influence of radiation

Card 1/2 UDC: 539.184: 546.292

L 31508-66
ACC NR: AP6013036

reabsorption, relative intensity measurements were made on the 6096 Å line ($2p_4$ - $1s_4$) in a direction perpendicular to the discharge tube. From the measurements of the absorption coefficient and the level populations as functions of the discharge current, the authors find the probability of the $2s_2$-$2p_4$ transition to be $(1 \pm 0.4) \times 10^7$ sec^{-1}. Some deviations from the results obtained by others are briefly discussed, and some advantages of the present method are pointed out. Orig. art. has: 2 figures and 1 formula.

SUB CODE: 20/ SUBM DATE: 31Aug65/ ORIG REF: 002/ OTH REF: 003

Card 2/2 mc

L 29207-66 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6015438 SOURCE CODE: UR/0051/66/020/005/0913/0914

AUTHOR: Chebotayev, V. P.; Vasilenko, L. S.

45
B

ORG: none

TITLE: Speed and cross section for the excitation of the $3s_2$ level in neon by metastable 2^1S helium atoms during discharge in a helium-neon mixture

SOURCE: Optika i spektroskopiya, v. 20, no. 5, 1966, 913-914

TOPIC TAGS: excitation cross section, gas laser, helium, neon, laser emission, gas discharge

ABSTRACT: The authors study the effect of stimulated emission on the intensity of spontaneous emission in a helium-neon laser as a basis for determining the rate of excitation of the $3s_2$ level. It was found that the variable component of spontaneous emission parallel to the electric field vector of the light wave is not polarized. Approximately 6-8% of the variable component of the wave perpendicular to the polarization plane of laser emission is polarized. An expression is given for the rate of stimulated transition per unit volume of the discharge tube in terms of laser emission power. A curve is given showing the excitation rate and density of metastable atoms as a function of discharge current. The cross section for transmission of excitation from the 2^1S level in helium to the $3s_2$ level in neon at a current of 30 ma

UDC: 537.523/ .527

Card 1/2

L 29207-66

ACC NR: AP6015438

0

was found to be $2.2 \cdot 10^{-16}$ cm^2. This cross section is somewhat underestimated since the density gradient for neon atoms due to the temperature gradient across the discharge was not taken into consideration. Orig. art. has: 1 figure, 3 formulas. [14]

SUB CODE: 20/ SUBM DATE: 24Sep65/ ORIG REF: 002/ OTH REF: 001/

ATD PRESS: 5004

Card 2/2 CC

L 29357-66 EEC(k)-2/EWP(k)/EWT(l)/EWT(m)/FBD/T/EWP(t)/ETI IJP(c) WG/JD
ACC NR: AP6018455 SOURCE CODE: UR/0051/66/020/006/1087/1088

AUTHOR: Lisitsyn, V. N.; Chebotayev, V. P.

ORG: none

TITLE: Generation at the 4f—3d transitions of neon with optical pumping of a helium discharge lamp in an He—Ne mixture

SOURCE: Optika i spektroskopiya, v. 20, no. 6, 1966, 1087-1088

TOPIC TAGS: laser, laser pumping, optical pumping

ABSTRACT: An investigation was made of the use of optical pumping for obtaining generation on high transitions of neon. The laser used in the experiments had external spherical mirrors spaced 2 m apart and an operational tube 9 mm in diameter with a 140-cm discharge length. Two optical pumping lamps, filled with helium at a pressure of 4 mm Hg, were placed along the operational tube. A glow discharge was produced in the He—Ne mixture in the operational tube. The pumping lamps operated in continuous and pulsed regimes (maximum currents 0.6 and 50 amp, respectively). Generation with optical pumping appeared at the 4f—3d Ne transitions with $\lambda = 1.8281$ and 1.8287 μ. The maximum generation intensity during pumping was obtained at a pressure of the mixture which was optimum for obtaining population inversion between the 4s—3p

Card 1/2 UDC: 621.375.8 : 535

L 29357-66
ACC NR: AP6018455

Ne levels (λ = 1.15 μ). This pressure corresponded to a maximum concentration of the metastable atoms of 2^3S He. Very weak generation on the aforementioned lines was observed without optical pumping at lower pressures of the mixture (pressures which were near the optimum for generation at the 5s—3p Ne (λ = 0.63 μ) transition). With pulsed optical pumping, a comparatively large amplification produced a generation on 1.8 μ with an operational discharge 30 cm long. The generation appearing at the 4f—3d transition was followed by an attenuation or breaking away (in the pulsed regime) of the generation on 1.15 μ, which was present without pumping. Thus, generation with optical pumping at the 4f—3d transitions is due to a stronger population increase of 4f Ne levels in comparison with the 3d levels. The greater population increase is caused by the reactions $He(2^3S) + h\nu \rightarrow He(2^3P)$ and $He(2^3P) + Ne(^1S_0) \rightarrow Ne(6s, 5d, etc.) + He(^1S_0) \pm \Delta E$. The authors thank G. A. Milushkin for help in the work. Orig. art. has: 2 formulas and 1 figure. [JA]

SUB CODE: 20/ SUBM DATE: 21Dec65/ ORIG REF: 001/ OTH REF: 001
ATD PRESS: 5010

Card 2/2

L 34851-66 FBD/EWT(1)/EEC(k)-2/T/EWP(k) IJP(c) WG

ACC NR: AP6018451 SOURCE CODE: UR/0051/66/020/006/1078/1080

47
B

AUTHOR: Beterov, I. M.; Chebotayev, V. P.

ORG: none

TITLE: Cross section of inelastic processes in a helium-neon laser 25

SOURCE: Optika i spektroskopiya, v. 20, no. 6, 1966, 1078-1080

TOPIC TAGS: optic pumping, gas laser, helium neon laser, inelastic interaction, METASTABLE STATE, HELIUM, NEON

ABSTRACT: Optical pumping as a means of varying the populations of metastable levels of a helium-neon laser is studied. Decrease in the density of the metastable states of helium varies the populations of those neon levels which are excited by collisions with the metastable helium atoms. By measuring the variation in the amplification of the laser and the variation in the density of the metastable helium atoms, the cross section of inelastic processes can be determined. The equipment used to make the measurements is shown in a diagram. The He-Ne laser operates at the wavelengths 1.1523 and 1.1614 μ. The measurements were made on a calibrated attenuator in the form of a plane parallel glass plate inserted in the resonator to determine the generation threshold. The variation in the concentration of metastable helium atoms under the action of a helium lamp was measured from the helium absorption line 3889 Å. Results of

UDC: 621.375.9 : 535

Card 1/2

L 34851-66

ACC NR: AP6018451

measurements are tabulated and evaluated in terms of those given by Javan, et al (*Phys. Rev. Letters*, 6, 106, 1961). Orig. art. has: 6 formulas, 1 figure, 1 table. [14]

SUB CODE: 20/ SUBM DATE: 04Oct64/ ORIG REF: 005/ OTH REF: 005
ATD PRESS: 5131

Card 2/2

L 44789-66 EWT(1)/EEC(k)-2/T/EWP(k) IJP(c) WG/WW/GG

ACC NR: AP6031036 SOURCE CODE: UR/0109/66/011/009/1712/1714

60
B

AUTHOR: Chebotayev, V. P.

ORG: none

27

TITLE: Accurate measurement of light velocity by means of an Ne-H_2 laser 25

SOURCE: Radiotekhnika i elektronika, v. 11, no. 9, 1966, 1712-1714

TOPIC TAGS: light velocity, ~~velocity measurement~~, gas laser, neon hydrogen laser, LABORATORY OPTIC INSTRUMENT

ABSTRACT: A proposal is made for using a neon-hydrogen laser in a hollow cathode (see Fig. 1) to measure light velocity. The accuracy is determined by the precision

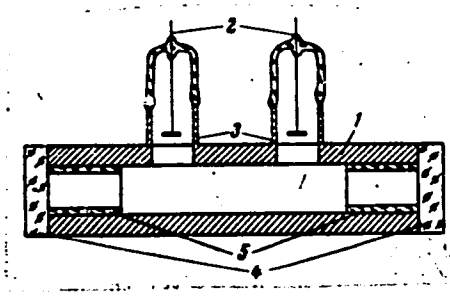

Fig. 1. Schematic of the arrangement

Card 1/2 UDC: 535.22.08

with which the beat frequency and the difference in the generation wavelengths can be measured. The latter can be measured by means of a passive interferometer with a known length and with

$$\Delta\lambda = \frac{2L}{q_1} - \frac{2L}{q_2},$$

where q_1 and q_2 are half-wave numbers at two different wavelengths. The pulsed discharge was excited in a steel tube 1 (outside diameter, 40 mm; inside, 18 mm) which served as a hollow cathode. Two anodes 2 were soldered through Kovar junctions 3. The tube ends were parallel within ±1" and their surface roughness was approximately 0.01 μ. The cavity consisted of plane glass mirrors 4 (effective diameter, 1 cm) which also sealed the system. The cavity length and active discharge interval were 26 and 16 cm, respectively. Glass inserts 5 were used to protect the mirrors from being sputtered by the cathode material during discharge. Laser action occurred at 11,143 Å due to the $2s_4$—$2p_8$ transition. The photomultiplier output was fed into the vertical amplifier of an oscillograph. The sweep time was equal to the time necessary to change the resonator wavelength to one-half the generation wavelength and was determined by the rate of change of the laser temperature. The method for measuring wavelength difference can also be used for making accurate measurements of generation wavelengths. Orig. art. has: 2 figures. [YK]

SUB CODE: 20/ SUBM DATE: 020ct65/ ORIG REF: 002/ OTH REF: 007/ ATD PRESS: 5078

L 08189-67 EWT(l)/EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6032932 SOURCE CODE: UR/0288/66/000/002/0158/0159

40
B

AUTHOR: Chebotayev, V. P.

ORG: Institute of Semiconductor Physics, Siberian Section AN SSSR, Novosibirsk (Institut fiziki poluprodnikov Sibirskogo otdeleniya AN SSSR, Novosibirsk)

TITLE: Regenerative emission at the 6328 line in a discharge in a mixture of helium and neon

SOURCE: AN SSSR. Sibirskoye otdeleniye. Seriya tekhnicheskikh nauk, no. 2, 1966, 158-159

TOPIC TAGS: emission spectrum, helium, neon, resonator

ABSTRACT: The article gives the results of a study of emission at the 6328 Å neon line in a discharge in a mixture of neon and helium from and OKG type resonator under regenerating conditions. The distance between the spherical mirrors, with a radius of curvature of 2000 mm, was equal to about 2000 mm. The diameter of the discharge tube was 7 mm. The discharge was induced by a high frequency generator. The distance between neighboring types of vibrations, 70 megahertz, for the given geometry of the resonator, was significantly less than the width of the line, 1500 megahertz. Based on an experimental photo, a figure shows the interference rings obtained with the use of a 30 mm Fabry and Perot etalon; the well defined rings correspond to the 6328 Å

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ACC NR: AP6032932

line, and the washed out lines to the 6401 Å line. The form of the emission line was studied using a 100 mm Fabry and Perot etalon. The presence of the Ne^{20} and Ne^{22} isotopes leads to an unsymmetrical emission line. The breadth of the emission line is approximately 3 times less than the breadth of the spontaneous emission. Orig. art. has: 1 figure.

SUB CODE: 20/ SUBM DATE: 08Oct64/ OTH REF: 001

Card 2/2 dda

ACC NR: AP7000037 SOURCE CODE: UR/0051/66/021/005/0654/0656

AUTHOR: Beterov, I. M.; Chebotayev, V. P.

ORG: none

TITLE: Use of optical pumping for the investigation of disintegration of neon levels

SOURCE: Optika i spektroskopiya, v. 21, no. 5, 1966, 654-656

TOPIC TAGS: neon, metastable state, spectral line, pressure effect, line intensity, optic transition, optic pumping

ABSTRACT: To check on the possible decrease in the effective lifetime of neon levels with increasing pressures and on the presence of a nonradiative process of disintegration of the 2p levels of neon, the authors investigated the mechanism of the disintegration of these levels by means of optical pumping, using a procedure employed successfully before for helium (Opt. i spektr. v. 20, 734, 1965). The procedure is based on maintaining a constant concentration of metastable atoms at the investigated levels, so that the pressure dependence of the lifetime can be obtained at constant intensity. The apparatus and the test procedure are described briefly. In the experiments, the light source was pumped with a neon lamp modulated at 1000 cps, and the integral change in the intensity of the lines from the 2p levels was determined with a vacuum photocell and auxiliary equipment. The line intensities remained constant in a pressure range 0.5 - 10 mm Hg. It is therefore concluded that at these pressures there is either no nonradiative disintegration at all, or that its role is negligible. The neon atoms in

Card 1/2 UDC: 621.375.9.535

ACC NR: AP7000037

the 2p states are disintegrated essentially by spontaneous transitions to the lower 1s levels. It is noted in the conclusion that this procedure can be useful to determine disintegration of levels connected with the metastable state by optically allowed transitions, and in other gases in which optical pumping from the metastable state is sufficiently effective. Orig. art. has: 2 figures and 2 formulas. [02]

SUB CODE: 20/ SUBM DATE: 13Apr66/ ORIG REF: 002/ OTH REF: 001 /
ATD PRESS: 5109

Card 2/2

RYADNOVA, I.M., kand.sel'skokhoz.nauk; CHEBOTAYEVA, T.F.

Local cherry varieties in Krasnodar Territory. Agrobiologiia no.3:463-464 My-Je '59. (MIRA 12:9)

1. Opytno-selektsionnaya stantsiya, g.Krymsk, Krasnodarskogo kraya.

(Krasnodar Territory--Cherry--Varieties)

L 15555-66 EWT(1)/EWT(m)/EWP(t)/EWP(b) IJP(c) JD
ACC NR: AP6004402 SOURCE CODE: UR/0051/66/020/001/0021/0026

AUTHOR: Chebotayev, V. P.

ORG: none

TITLE: Excitation of neon levels during discharge in a neon-hydrogen mixture

SOURCE: Optika i spektroskopiya, v. 20, no. 1, 1966, 21-26

TOPIC TAGS: discharge plasma, neon, hydrogen, excitation spectrum, hydrogen plasma

ABSTRACT: Excitation of neon levels was studied during a hollow-cathode discharge in a mixture of neon and hydrogen. The hollow cathode was a steel cylinder inside a glass envelope. The anode was on one edge of the cathode. The system used for recording the spectrum consisted of a monochromator with an electron-optical converter at the output. The radiation from the screen of this converter fell directly on a photomultiplier tube. Spectra are given for discharge radiation in neon and in a neonhydrogen mixture in the 0.8-1.1 μ range at neon pressures of 1 mm Hg and various hydrogen pressures. At a hydrogen pressure of 0.2 mm Hg the intensity of most of the neon lines remains practically unchanged and falls with a further increase in

Card 1/2 UDC: 537.523/.527 : 546.292

L 15555-66

ACC NR: AP6004402

2

hydrogen pressure. This may be interpreted as a reduction in the average energy of electrons in the hollow cathode when hydrogen is added due to the reduction in the mean free path of the electrons. Possible mechanisms responsible for the $2s$-$2p$ population inversion observed in the neon-hydrogen system are discussed. The cross sections for annihilation of each of the $1s$ levels in neon by hydrogen molecules are determined. These cross sections for levels $1s_2$, $1s_3$ and $1s_4$ were found to be approximately $5 \cdot 10^{-16}$ cm^2, while the cross section for $1s_5$ was $2 \cdot 10^{-16}$ cm^2. Since the lifetimes of metastable atoms coincide in order of magnitude with the thermalization time of electrons, these annihilation cross sections may be underestimated. The author is grateful to M. F. Kryshtal' and G. A. Milushkin for assistance in carrying out the experiments. Orig. art. has: 3 figures, 2 formulas.

SUB CODE: 20/ SUBM DATE: 12Oct64/ ORIG REF: 004/ OTH REF: 007

OC

Card 2/2

CHEBOTIN, V.N.

Electron conduction of ionic crystals in equilibrium with a gaseous phase. Part 1: Pure crystal according to Frenkel' and Schottky. Trudy Inst. elektrokhim. UFAN SSSR no.3:111-124 '62. (MIRA 16:6)

(Ionic crystals) (Electrons)

CHEBOTIN, V.N.; NEUYMIN, A.D.; PAL'GUYEV, S.F.

Electron conduction of ionic crystals in equilibrium with a gaseous phase. Part 2: Solid solution with anti-Frenkel' defects. Trudy Inst. elektrokhim. UFAN SSSR no.3:125-132 '62. (MIRA 16:6)

(Ionic crystals) (Electrons)

ACCESSION NR: AT4008737 S/2631/63/000/004/0097/0110

AUTHOR: Neuymin, A. D.; Pal'guyev, S. F.; Chebotin, V. N.

TITLE: Reduction of cerium dioxide in the CeO_2- La_2O_3 mixture and electrical conductivity of the mixtures

SOURCE: AN SSSR. Ural'skiy filial. Institut elektrokhimii. Trudy*, no. 4, 1963. Elektrokhimiya rasplavlenny*kh solevy*kh i tverdy*kh elektrolitov, 97-110

TOPIC TAGS: refractory oxide, high temperature ceramic, cerium oxides, cerium dioxide, Ce O sub 2, Ce O sub 1.5, lanthanum oxides, La sub 2 O sub 3, La O sub 1.5, Ce O sub 2 - La sub 2 O sub 3 system, Ce O sub 2 - La sub 2 O sub 3 crystals, rare earth oxides

ABSTRACT: Reducibility and electron conductivity of the system CeO_2-La_2O_3 was studied in relation to temperature, content of La_2O_3 and the composition of the gaseous phase with which the crystals in question were in a state of thermodynamic equilibrium. A mixture of gaseous CO and CO_2 was used as the reducing agent. The study emphasized temperatures above 700C and reduction of solid solutions with anionic vacancies (i.e. mixtures containing up to 60 mol% $LaO_{1.5}$) and related, broadly speaking, to use of cerium dioxide based ceramics at very high temperatures. Reducibility was studied by means of equipment shown (see Fig. 1 in the

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ACCESSION NR: AT4008737

Enclosure). Conductivity was measured in an atmosphere of 66%CO+34%CO_2. It was established that isotherms for reduction depth--composition, $CeO_{1.5}$ concentration--composition and conductivity--composition peak in the area of 15 to 20 mol% $LaO_{1.5}$ (see Figs. 2 and 3 in the Enclosure and the table of total, ion and electron conductivity in the original. Reducibility and electron conductivity increase exponentially in relation to temperature (see Figs. 4, 6 and 7 in the Enclosure). Their temperature coefficients decrease as the content of $LaO_{1.5}$ increases to about 20 mol%, then they increase when such content increases beyond that level (see Fig. 8 in the Enclosure). This pattern governs the presence of peaks on these isotherms. The authors demonstrated that the coulombic interaction of structural defects in a crystal provides an adequate quantitative explanation of the decrease in temperature coefficients of reducibility and conductivity as the concentration of admixture increases. Activation energy of electrons was determined and their mobility evaluated. Reducibility and electron conductivity of the studied solid solutions decrease as partial oxygen pressure in the gaseous phase increases (see Fig. 5 in the Enclosure). Orig. art. has: 34 formulas, 9 graphs, 2 tables.

ASSOCIATION: Institut Elektrokhimii, Ural'skiy filial AN SSSR (Institute of Electrochemistry, Ural branch AN SSSR)

Card 2/12

L 16608-65 ESD(gs)/ASD(a)-5/AS(mp)-2/AFETR
ACCESSION NR: AT4048677 S/2631/64/000/005/0123/0131

AUTHOR: Chebotin, V. N.; Volchenkova, Z. S.; Pal'guyev, S. F. B+1

TITLE: Electronic conductivity of ionic crystals in equilibrium with the gas phase. III. Oxidation semiconductor with admixed acceptors

SOURCE: AN SSSR. Ural'skiy filial. Institut elektrokhimii. Trudy*, no. 5, 1964. Elektrokhimiya rasplavlenny*kh solevy*kh i tverdy*kh elektrolitov (Electrochemistry of fused salt and solid electrolytes), 123-131

TOPIC TAGS: hafnium dioxide, ionic crystal conductivity, semiconductor impurity, oxygen pressure, solid electrolyte, oxidation semiconductor

ABSTRACT: This study was prompted by the scarcity of information on hafnium dioxide conductivity. It is a continuation of two former communications by the same authors where they worked out the system of equations which is applied here to an ionic crystal having, in addition to inherent defects, acceptors in the form of impurities. This theory is used to explain the abnormal dependence of the p-conductivity of hafnium dioxide on oxygen pressure. The theory is explained in 19 equations and the experimental procedures are described: hafnium dioxide with ZrO_2(0.75%), Si(0.1%), Ti(0.1%), Mg(<0.1%); Ni(<0.001%) and Bi(0.003%) admixtures was calcined, pressed, ground, pressed and

Card 1/2

calcined again (1550C for 2 hrs.); tablets were polished and provided with Pt electrodes. In various boundary cases it has been found that the number of free electron holes depends on the temperature and on the pressure of the nonmetallic gas phase component with which the crystal is in equilibrium. Only considerable admixtures distort the behavior of the crystal, otherwise it acts as a normal oxidation semiconductor. The electrical conductivity and average transfers of HfO_2 in different media and temperatures (700-1000C) have been measured. Ionic conductivity is affected only slightly by increased O_2 pressure. Electronic conductivity depends on the oxidation of the crystal at high O_2 pressures and is proportional to $p^{1/4}$. In a strongly reducing environment, HfO_2 loses electron holes, thus compensating for the excessive negative charge with O_2 vacancies and resulting in an electronic conductivity of practically zero. Orig. art. has: 2 figures, 30 formulas and 1 table.

ASSOCIATION: Institut elektrokhimii, Ural'skiy filial AN SSSR (Institute of Electrochemistry, Urals Branch, AN SSSR)

SUBMITTED: 00 ENCL: 00 SUB CODE: SS, EM

NO REF SOV: 006 OTHER: 004

CHEBOTKEVICH, G.V., inzh.; REVVA, G.M., inzh.

Testing of the newly designed safety valve of an impulse-type safety device. Elek. sta. 31 no.8:12-14 Ag '60. (MIRA 14:9)
(Boilers--Safety appliances)

SOBOL', S.I.; NELEN', I.M.; SPIRIDONOVA, V.I.; BERLIN, Z.L; GORYACHKIN, V.I.; TARAKANOV, B.M.; SHKURSKIY, V.D.; Prinimali uchastiye: FREYMAN, A.K., inzh.; BRUK, B.M., inzh.; CHEBOTKEVICH, G.V., inzh.; OSPIN, V.G., inzh.; ALEKSANDROVA, N.N., laborant; SALTYKOV, I.B., laborant; TELKOVA, Ye.I., laborantka; TEPLYAKOV, Yu.M., laborant; GAVRILENKO, A.P., slesar'; KURGUZOV, A.S., elektrik; GAVRILOV, I.T., elektrik

Pilot-plant testing of the State Institute of Nonferrous Metals flow sheet for the autoclave retreatment of copper-molybdenum intermediate products. Sbor. nauch. trud. Gintsvetmeta no.19:319-339 '62. (MIRA 16:7)

(Nonferrous metals--Metallurgy)
(Leaching)

L 4266-66 EWT(l)/EWT(m)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD

ACC NR: AP5024553 UR/0070/65/010/005/0688/0692

548.4:538.65

AUTHOR: Chebotkevich, L. A.; Urusovskaya, A. A.; Veter, V. V.

TITLE: Motion of dislocations under the influence of a magnetic field

SOURCE: Kristallografiya, v. 10, no. 5, 1965, 688-692

TOPIC TAGS: crystal dislocation, iron, magnetization, magnetostriction

ABSTRACT: The motion of dislocations in a ferromagnetic (filamentary iron crystals grown by reducing $FeCl_2$ in hydrogen) was caused by placing the sample in a magnetic field. The dislocations were revealed by etching in a mixture of picric and nitric acid. Fresh dislocations were obtained by deforming with the tip of a diamond pyramid. The domain structure was observed by the standard powder method. Magnetization causes the motion of dislocations in their slip plane; this motion may be due both to a direct interaction of the domain bondary and dislocation (magnetoelastic interaction) and to the influence of magnetostriction, i.e., elastic stresses arising in the sample as a result of repeated magnetization. The effects of these two factors could not be separated. "We express our deep appreciation to V. L. Indenbom for valuable comments and to I. P. Kushnir for providing the samples of iron whiskers." Orig. art. has: 3 figures.

Card 1/2

L 4266-66

ACC NR: AP5024553

3

ASSOCIATION: Dal'nevostochnyy gosudarsvennyy universitet (Far East State University); Institut kristallografii AN SSSR (Institute of Crystallography, AN SSSR) 44, 55

SUBMITTED: 17May65 ENCL: 00 SUB CODE: SS, EM

NO REF SOV: 004 OTHER: 019

Card 2/2 JP

KARGIN, V.A.; KOZLOV, P.V.; MIRLINA, S.Ya.; KAPRALOVA, Z.A.; CHEBOTKEVICH, P.F.

Mass transfer and structure-forming processes in the polymer-homologous series of polyacrylic acid and fractionated gelatin. Vysokom. soed. 4 no.12:1881-1886 D '62. (MIRA 15:12)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.

(Acrylic acid)
(Gelatin) (Mass transfer)

CHEBOTKOV, B., kand.tekhn.nauk; SLIPCHENKO, I., inzh.; POLONSKIY, M., inzh.

New developments in the use of three-dimensional concrete blocks. Prom. stroi. i inzh. soor. 5 no.2:12-15 Mr-Ap '63. (MIRA 16:4)
(Concrete blocks) (Precast concrete construction)

STROKOV, G.I., inzh.; CHEBOTKOV, B.G., kand.tekhn.nauk

First experience with the assembly of precast reinforced concrete elements in construction of the Kiev Hydroelectric Power Station. Gidr. stroi. 33 no.5:8-11 My '63. (MIRA 16:5)
(Kiev Hydroelectric Power Station—Design and construction)
(Precast concrete construction)

CHEBOTKOV, B.G., prof., doktor tekhn.nauk

"Construction of hydroelectric power stations" by P.S. Neporozhnyi. Reviewed by B.G. Chebotkov. Gidr. stroi. 31 no. 1:62 Ja '61. (MIRA 14:2)

1. Glavnyy spetsialist sektora stroitel'stva gidroelektricheskikh stantsiy Nauchno-issledovatel'skogo instituta osnovaniy i podzemnykh sooruzheniy Akademii stroitel'stva i arkhitektury USSR.
(Hydroelectric power stations)

POLONSKIY, M.L., inzh.; CHERNUKHIN, A.M., inzh.; CHEBOTKOV, B.G., kand. tekhn. nauk

Tractor-type rubble layer. Stroi. i dor. mash. 9 no.5:11-13 My '64. (MIRA 17:6)

LYAPIN, D.P., inzh.; YATSKIKH, V.G., inzh.; YUROVSKIY, L.A., inzh.; CHEBOTKOV, I.P., inzh.; OVCHAROV, V.S., inzh.

Coal mining without miners using the UPD sawing machine in developing the "Izvestniachka" seam of Dzerzhinskugol' Trust Artem Mine. Sbor.DonUGI no.20:3-15 '61. (MIRA 15:6)
(Donets Basin--Coal mines and mining)

KLOCHKO, I.P.; CHEBOTKOV, I.P., starshiy nauchnyy sotrudnik

Directed boreholes in steeply dipping seams dangerous as to sudden outbursts. Ugol' Ukr. 6 no.8:42-43 Ag '62. (MIRA 15:11)

1. Glavnyy geolog Gosudarstvennogo tresta ugol'nykh predpriyatiy Kalininskoy oblasti kombinata Tulaugol' (for Klochko). 2. Donetskiy nauchno-issledovatel'skiy ugol'nyy institut (for Chebotkov).
(Boring)
(Coal mining machinery)

CHEBOTKEVICH, V.

Additional data on the areometric method for determining chemical composition of sweetened condensed skimmed milk. Moloch.prom. 18 no.3:42-43 '57. (MLRA 10:4)
(Milk--Analysis and examination)

CHEBOTKOV, B. G. Cand Tech Sci -- "Study of the ~~operation~~ performance of cranes in the conveyer-~~system~~ line construction of linear reinforced-conrete hydraulic structures." Kiev, 1961 (Acad of Construction and Architecture UkSSR. Sci Res Inst of Organization and Mechanization of Construction ~~Industry~~ Operations). (KL, 4-61, 202)

CHEBOTNIKOVA, K. M.

"Honey Productivity of the Principal Honey Plants in East Kazakhstan Province," Pchelovodstvo, 29, No.9, 1952

USSR/Farm Animals - Honey Bees. C-5

Abs Jour : Ref Zhur - Biol., No 18, 1958, 83464

Author : Chebotnikova, K.M.
Inst : -
Title : Honey Productivity of Beans and Mustard Plants at Various Planting Terms.

Orig Pub : Pchelovodstvo, 1958, No 2, 38-39.

Abstract : Beans and mustard planted after 15 May under Alma-Ata oblast' farming conditions produced poor crops or did not germinate at all. It is recommended that during the period of 15 April to 15 May, three plantings should be executed; for beans, an additional winter planting should be executed as well.

Card 1/1

CHEBOTAREVA, T.Ye.

Study of the structure of glass of $2SiO_2.K_2O$ composition by infrared spectroscopy. Zhur. strukt. khim. 5 no.3:493-495 My-Je '64.
(MIRA 18:7)

1. Gosudarstvennyy opticheskiy institut imeni S.I. Vavilova.

CHEBOTOV, B.G., kand.tekhn.nauk; POLONSKIY, M.L., inzh.; KOLESNIK, Yu.I., inzh.; FADEYEV, A.V.

Anchoring of the jetty slopes of the Kiev Hydroelectric Power Station using a continuous flow method. Energ. stroi. no.34:53-57 '63. (MIRA 17:1)

1. Nauchno-issledovatel'skiy institut organizatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stvu Akademii stroitel'stva i arkhitektury UkrSSR (for Chebotkov, Polonskiy). 2. Stroitel'stvo Kiyevskoy gidroelektrostantsii (for Kolesnik, Fadeyev).

CHEBOTOVA, T.I.

Polyp of the jejunum. Khirurgiia 34 no.9:121-122 S '58.
(MIRA 12:4)

1. Iz 1-y khirurgicheskoy kliniki (zav. - zasluzhennyy deyatel' nauki prof. B.E. Linberg) Moskovskogo oblastnogo nauchno-issledovatel'skogo instituta imeni M.F. Vladimirskogo.
(JEJUNUM--TUMORS)

AVDEYEV, Yu.G.; VORONIN, V.S.; KOROSTYLEV, N.P.; SMIRNOV, V.G.; PUSTOVALOV, A.I.; CHEBOTYREV, B.A.; ZENKOV, B.N.; KARABACH, T.L.

Determining the efficiency of various ways of charging boreholes along the contour of a mine working. Shakht. stroi. 8 no.10: 19-21 O '64. (MIRA 17:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut tsvetnoy metallurgii (for Avdeyev, Voronin, Korostylev, Smirnov).
2. Rudnik imeni XXII s"yezda Kommunisticheskoy partii Sovetskogo Soyuza Zyryanovskogo kombinata (for Pustovalov, Chebotyrev, Zenkov, Karabach).

CHEBRIKOV, I. D.

"Intestinal Fissures of Gunshot Origin." Sub 1 Dec 47, Moscow Order of Lenin Medical Inst

Dissertations presented for degrees in science and engineering in Moscow in 1947

SO: Sum No. 457, 18 Apr. 55

ANDRIASYAN, G.K., kand. med. nauk; CHEBRIKOVA, Ye.I.

Treatment of periodontitis by electrolysis. Stomatologiia 43 no.1:89-90 Ja-F '64 (MIRA 17:4)

1. Stomatologicheskoye otdeleniye (zav. A.V. Kvitelashvili) kurortnoy polikliniki No.1(glavnyy vrach A.V. Maisheyev), Sochi.

C

CHEBRIKOVA, Z. M.,

"Study of the Process of Electrochemical Oxidation of Benzene." (Dissertation for Degree of Candidate of Science) Min Higher Education USSR, Dnepropetrovsk Chemical Technology Inst imeni F. E. Dzerzinskiy, Dnepropetrovsk, 1955

SO: M-1036, 28 Mar 56

CHEBRIKOVA, Z.M.; BELAYA, Zh.V.; LOSHKAREV, M.A.

Effect of temperature on the potentials of cobalt and nickel oxide electrodes. Trudy DKHTI no.16:55-62 '63. (MIRA 17:2)

CHEBROV, I.

[illegible] ...ENKO, A.; [illegible], L.; CH[illegible]OV, I.

[illegible] photographers of Moscow. Sov.foto 17 no.7:67-69 Jl '57. (MLRA 10:9)

(Moscow--Photography)

RUMYANTSEV, S.; SINGELEYEVA, O., kontroler-revizor; CHEBRUCHAN, P.

Simplify accounting and reports in savings banks. Fin. SSSR 21 no.8: 77-79 Ag '60. (MIRA 13:8)

1. Glavnyy bukhgalter Upravleniya gostrudsberkass i goskredita Checheno-Ingushskoy ASSR (for Rumyantsev). 2. Zaveduyushchiy tsentral'noy sberkassoy Vulkaneshtskogo rayona Moldavskoy SSR (for Chebruchan).
(Savings banks--Accounting)

CHEBRUCHAN, P.

We are struggling for the title of a communist labor collective.
Fin. SSSR 22 no.9:65-66 S '61. (MIRA 14:9)

1. Zaveduyushchiy tsentral'noy sberegatel'noy kassoy No.6874
Vulkaneshtskogo rayona Moldavskoy SSR.
(Vulkaneshty District--Savings banks) (Socialist competition)

ZAYATS, A.I.; CHEBUKINA, L.K.

Polarization of chromium in solutions of ammonium sulfates and bivalent chromium. Ukr. khim. zhur. 30 no.4:330-337 '64. (MIRA 17:6)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR.

ZAYATS, A.I.; CHEBUKINA, L.K.

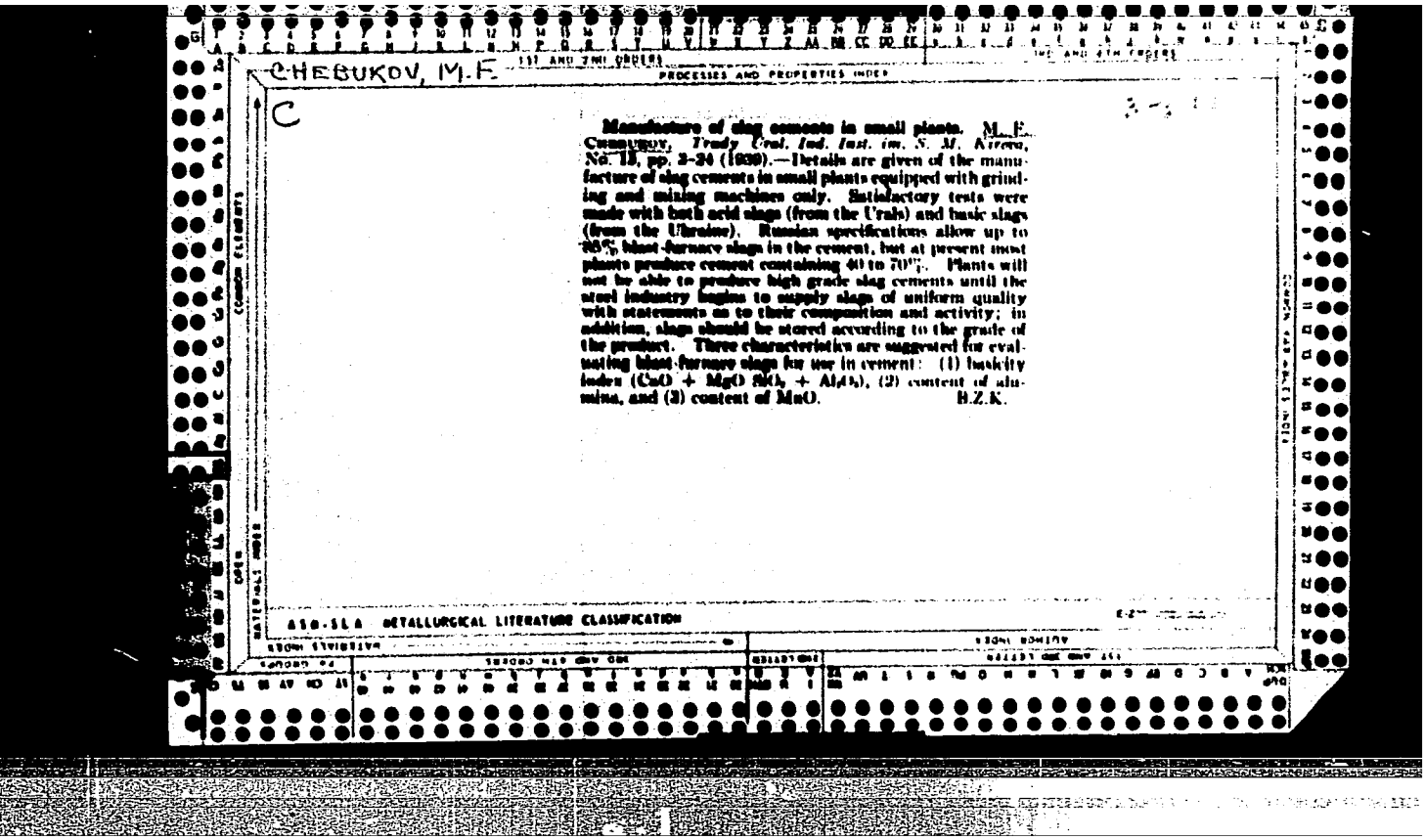
Polarization of chromium cathode in solutions of trivalent chromic sulfate. Ukr.khim.zhur. 30 no.5:461-468 '64. (MIRA 18:4)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR.

CHEBRUKINA, Ye.M., kand.tekhn.nauk

Developing high-speed working parts of electric machinery for chopping succulent feeds. Nauch. trudy VIESKH 6:65-85 '59. (MIRA 13:12)

(Feed grinders)



CHEBUKOV, M.F.

C

Manufacture of slag cements in small plants. M. F. Chebukov, *Trudy Ural. Ind. Inst. im. S. M. Kirova*, No. 13, pp. 3–24 (1939).—Details are given of the manufacture of slag cements in small plants equipped with grinding and mixing machines only. Satisfactory tests were made with both acid slags (from the Urals) and basic slags (from the Ukraine). Russian specifications allow up to 85% blast-furnace slags in the cement, but at present most plants produce cement containing 40 to 70%. Plants will not be able to produce high grade slag cements until the steel industry begins to supply slags of uniform quality with statements as to their composition and activity; in addition, slags should be stored according to the grade of the product. Three characteristics are suggested for evaluating blast-furnace slags for use in cement: (1) basicity index ($CaO + MgO$)/($SiO_2 + Al_2O_3$), (2) content of alumina, and (3) content of MnO. B.Z.K.

A50-51A METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS PROCESSES AND PROPERTIES INDEX 3RD AND 4TH ORDERS

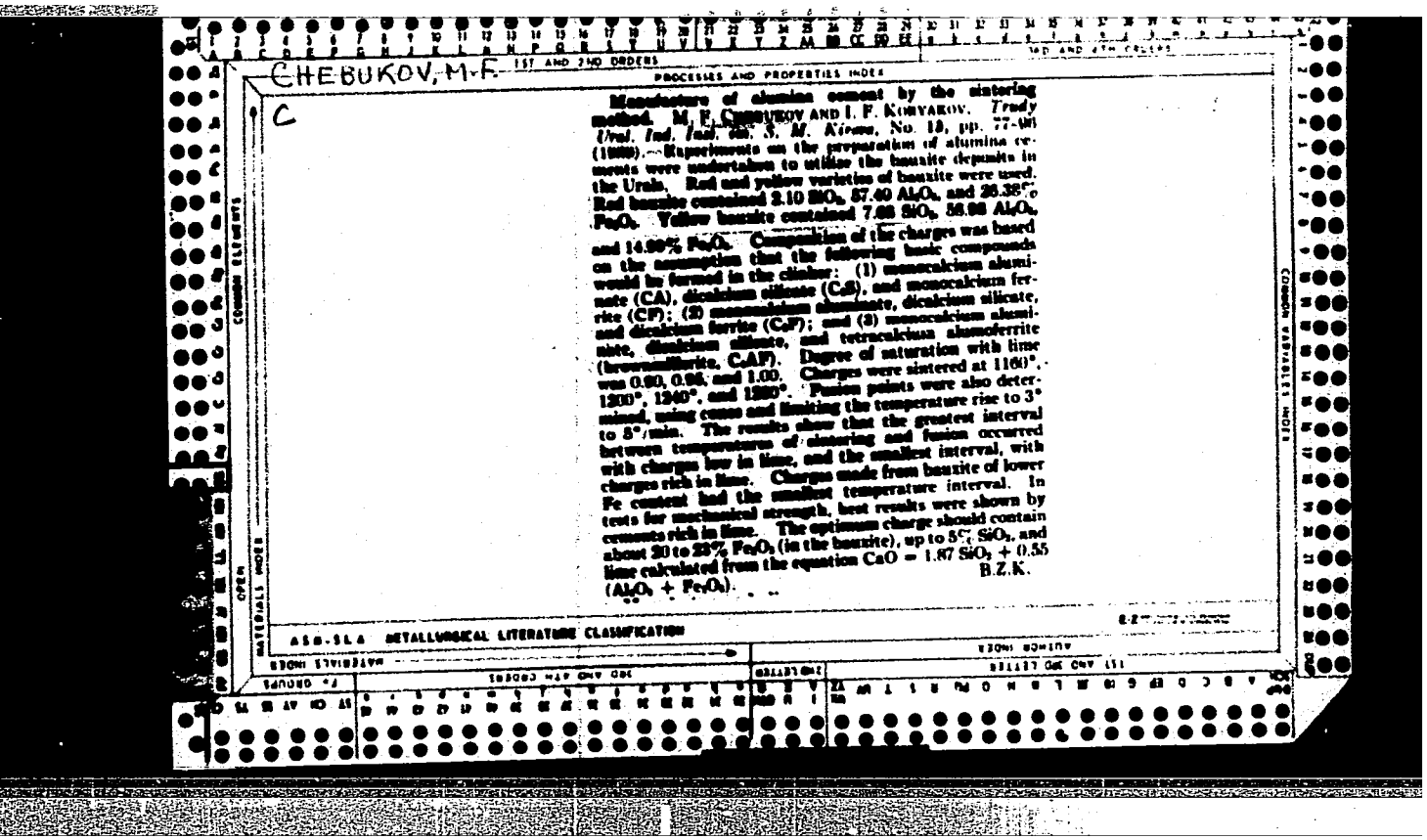
CHEBUKOV, M.F.

20

CA

Manufacture of lime-pozzuolana cements. M. F. Chebukov. *Trudy Ural. Ind. Inst. im. S. M. Kirova* No. 13, 34-48(1949); *Ceram. Abstracts* 1948, 40(in *J. Am. Ceram. Soc.* 31, No. 3).—In computing the compn. of lime-pozzuolana cements, the mech. strength of the mixt. is used to det. the ratio of lime hydraulic addn. The best ratio is detd. when K is min. in the equation $K = (P_0 + P_1 + P_2 + P_3)a/\{[P_0/(1 + z)][a + bz] + P_1 + P_2c + P_3g\}$, where K = coeff. of the ratio of the sp. vols. of the mixt. to the additive sp. vol. of the constituents, including water; P_0 = wt. of the lime-pozzuolana cement with the lime-hydraulic factor taken for mixing; P_1 = amt. of water for mixing which was detd. by previous expts.; P_2 = wt. of sand; P_3 = wt. of the catalytic dry addn. (gypsum); a = sp. vol. of the freshly prepd. mixt.; a = sp. vol. of the hydraulic addn.; b = sp. vol. of the slaked lime; c = sp. vol. of the sand; and g = the sp. vol. of the catalyst (gypsum). The correctness of this equation was checked by its originator (M. A. Reshetnikov), who used several types of lime-pozzuolana cements, but his data are not given in this paper. C. conducted tests with raw materials for lime-pozzuolana cements. By raising the drying temp. to 800°, the activity of tripoli dropped while that of diatomite increased somewhat. Cements were made in which the lime was slaked by the natural moisture of the tripoli; the characteristics of these cements were equal to those of cements prepd. with hydrate of lime. M. F. R.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



CHEBUKOV, M.F.

C

PROCESSES AND PROPERTIES INDEX

Manufacture of alumina cement by the sintering method. M. F. Chebukov and I. F. Kornyakov. *Trudy Vost. Inst. Inst. im. S. M. Kirova*, No. 18, pp. 77-98 (1959).—Experiments on the preparation of alumina cements were undertaken to utilize the bauxite deposits in the Urals. Red and yellow varieties of bauxite were used. Red bauxite contained 2.10 SiO_2, 57.40 Al_2O_3, and 26.35% Fe_2O_3. Yellow bauxite contained 7.68 SiO_2, 56.08 Al_2O_3, and 14.99% Fe_2O_3. Composition of the charges was based on the assumption that the following basic compounds would be formed in the clinker: (1) monocalcium aluminate (CA), dicalcium silicate (C_2S), and monocalcium ferrite (CF); (2) monocalcium aluminate, dicalcium silicate, and dicalcium ferrite (C_2F); and (3) monocalcium aluminate, dicalcium silicate, and tetracalcium aluminoferrite (brownmillerite, C_4AF). Degree of saturation with lime was 0.90, 0.95, and 1.00. Charges were sintered at 1160°, 1200°, 1240°, and 1280°. Fusion points were also determined, using cones and limiting the temperature rise to 3° to 5°/min. The results show that the greatest interval between temperatures of clustering and fusion occurred with charges low in lime, and the smallest interval, with charges rich in lime. Charges made from bauxite of lower Fe content had the smallest temperature interval. In tests for mechanical strength, best results were shown by cements rich in lime. The optimum charge should contain about 20 to 22% Fe_2O_3 (in the bauxite), up to 5% SiO_2, and lime calculated from the equation $CaO = 1.87\,SiO_2 + 0.55\,(Al_2O_3 + Fe_2O_3)$.

B.Z.K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CHEBUKOV, M. F.

CA

20

Effect of the rate of heating on the rate of reaction of lime in the preparation of clinker. M. F. Chebukov. *Doklady Akad. Nauk S.S.S.R.* 71, 725-8(1950).—Specimens made from mixts. of (a) limestone and blast-furnace slag, (b) limestone and sandy clay, and (c) siliceous limestone and sandy clay with and without coke breeze were fired in an elec. furnace at 1400–1450°. In one method (1), the specimens were heated at 15–16°/min. and held at max. temp. for 20–30 min.; in another method (2), the specimens were held for 20–30 min. in the furnace previously heated to max. temp. For portland-cement mixts., method (2) resulted, with few exceptions, in either equal or more nearly complete combination of CaO than method (1). For sandy clay and limestone mixts., combination of SiO$_2$ was as nearly complete in method (2) as in (1). Mixts. with coke breeze showed more nearly complete combination of CaO than those without. Tests with mixts. of limestone and ferruginous bauxite showed less free CaO in method (2) than in (1). Most of the CaO reacted during the heating of the mixt. to the given temp. (1300°); during the holding period, combination occurred very slowly. Treatment of mixts. of limestone and blast-furnace slag of different grain size showed decreasing free CaO with decreasing grain size. Coarse-grained slag produced a strongly caked clinker, which was ground with difficulty, whereas fine-grained slag produced clinkers having the strength of normal portland cement. During rapid heating of portland-cement mixts. consisting of slag and limestone, the slag becomes liquid and serves as the primary unstable phase, from which, after the min. of the CaO, the clinker minerals sep. as they are formed, and the compn. of the liquid gradually approaches that of the equil. compn. corresponding to the given temp. N. Z. K.

CHEBUKOV, M. J.

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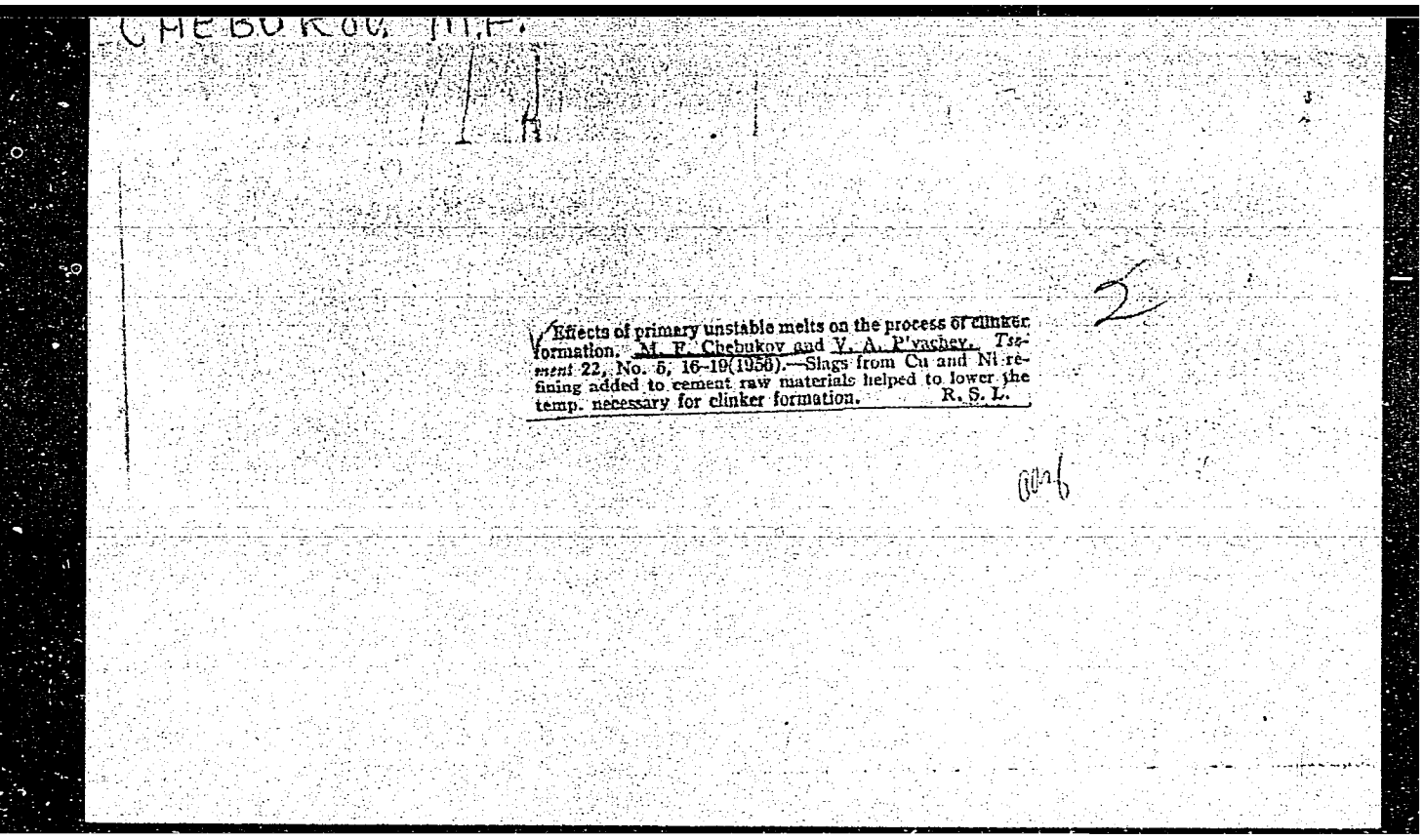
1251. The influence of the rate of heating on the combination of lime during the sintering of cements.—M. J. CHEBUKOV (*Silikat Tech.*, 4, 564, 1953). Various mixtures were fired in an electric furnace. Sintering improved if coke was present. The influence of coke ash is attributed to the Fe oxide it contains. Apart from the favourable effect of a higher temperature on all the reactions taking place in the specimens, the fact that decomposition of $CaCO_3$ and of kaolinite take place at the same time as the reactions leading to the formation of Ca silicates, aluminates, and ferrites, helps to increase reactivity. (2 tables.)

CHEBUKOV, M., kandidat tekhnicheskikh nauk (Sverdlovsk)

Foam concrete based on granulated blast-furnace slags. Stroi.mat. izdel.i konstr. 1 no.12:28-29 D '55. (MLRA 9:7)
(Concrete)

CHEBUKOV, M.F., kandidat tekhnicheskikh nauk; IGNAT'YEVA, L.P., inzhener

The filterability of cement slurries from certain plants of the Main Administration of Far Eastern Cement Industries. TSement 21 no.4:6-9 Ag'55. (MLRA 8:11)
(Soviet Far East--Cement industries)



CHEBUKOV, M.F.

Effects of primary unstable melts on the process of clinker formation. M. F. Chebukov and V. A. P'yachev. *Tsement* 22, No. 6, 16-19(1956).—Slags from Cu and Ni refining added to cement raw materials helped to lower the temp. necessary for clinker formation. R. S. L.

5(1, 2)

SOV/153-58-5-13/28

AUTHORS: Chebukov, M. F., P'yachev, V. A., Starinskaya, N. N.

TITLE: Characteristic Features of the Process of the Limestone Absorption in the Burning of Cement Charges Containing High-Furnace Slags Instead of Loam (Osobennosti protsessa usvoyeniya izvesti pri obzhige tsementnykh shikht, soderzhashchikh domennyy shlak, vmesto gliny)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnolcgiya, 1958, Nr 5, pp 76-81 (USSR)

ABSTRACT: By using high-furnace slags as raw material components in the production of portland cement clinker the consumption of fuel could be decreased and the output of the furnaces could be increased. Basic slags are used for this purpose to a high degree already. As the authors wanted to investigate the use of acid slags the subject mentioned in the title was studied. Sample charges were annealed in the furnace. Table 1 shows the chemical composition of the slags used. The results of the burning at different temperatures are given in figure 1 as a diagram of the limestone absorption; table 2 gives the characteristics and the results of the analyses of charges burned at 1400°. From figure 2 the dependence of the limestone binding upon the

Card 1/3

Characteristic Features of the Process of the Limestone Absorption in the Burning of Cement Charges Containing High-Furnace Slags Instead of Sand

burning temperature in slag containing charges, one without additions, two with sand addition, and three with sand and calcination, may be seen. As it may be seen therefrom the limestone binding is not slowed down between 1100° and 1300°, as is characteristic of slag charges. This may be explained by the iron containing addition. In this connection the authors regarded further experiments on the sand effect as necessary. Figure 3 shows the results, i. e. the dependence of the content of free CaO upon the content of flux materials ($C_3A + C_4AF$).

The behaviour of the slag containing charges at different content of flux minerals and sand was quite different and could be explained by the presence of chemical compounds in it. To determine the optimum sand addition to the charge, "limestone + slag" diagrams of the dependence of the content of free limestone upon the sand addition are given in figure 4. It may be seen from them that the optimum sand addition for charges containing Ural slags amounts to 4-6%. The authors arrived at the following conclusions: 1) The difficult binding of limestone in binary charges with Ural high-furnace slags may be explained

Characteristic Features of the Process of the Limestone Absorption in the Burning of Cement Charges Containing High-Furnace Slags Instead of Loam

by the ternary compounds contained therein. It is of no interest if these compounds contain MgO or Al_2O_3. The character of the limestone binding in the said compositions is different from that in loamy charges. 2) The addition of a certain amount of sand to the slag containing charges makes easier their burning in slow as well as in rapid burning. Thus, they can be more easily sintered than loamy charges. This is of importance for the production of silica containing cements. There are 4 figures, 2 tables, and 9 Soviet references.

ASSOCIATION: Ural'skiy politekhnicheskiy institut imeni S. M. Kirova, Kafedra tekhnologii tsementa (Ural Polytechnical Institute imeni S. M. Kirov, Chair of Cement Technology)

SUBMITTED: October 7, 1957

CHEBUKOV, M.F.; KASHIRSKIY, Yu.A.

Investigating certain properties of cinder concretes and slag concretes made with lime-cement-cinder binders. Nauch.dokl.vys. shkoly; stroi. no.1:195-201 '59. (MIRA 12:10)
(Concrete--Testing)

CHEBUKOV, M.F.; P'YACHEV, V.A.; STARINSKAYA, N.N.

Effect of the microstructure of carbonate raw materials on clinker formation. Izv.vys.ucheb.zav.;khim. i khim.tekh. 3 no.3:509-513 '60. (MIRA 14:9)

1. Ural'skiy politekhnicheskiy institut imeni S.M. Kirova, kafedra tekhnologii tsementa.
(Carbonates) (Cement)

CHEBUKOV, M.F.; IGNAT'YEVA, L.P.

Hydrofluoric acid production wastes as additives to cement for regulating the time of setting. Zhur. VKHO 5 no.6:712-713 '60. (MIRA 13:12)

1. Ural'skiy politekhnicheskiy institut im. S.M.Kirova.
(Cement) (Hydrofluoric acid)

KASHIRSKIY, Yu.A., kand.tekhn.nauk, dotsent; CHEBUKOV, M.F., kand.tekhn. nauk, dotsent

Some mechanical properties of fly ash concretes and lightweight concretes prepared with a lime-cement-fly ash binder. Trudy NII prom. zdan. i soor. no.3:5-14 '60. (MIRA 15:1)

(Lightweight concrete)

CHEBUKOV, M.F.; P'YACHEV, V.A.

Datolite sludge as raw material for manufacturing Portland cement.
TSement 26 no.5:24-26 S-O '60. (MIRA 13:10)
(Datolite) (Portland cement)

CHEBUKOV, M.F.; P'YACHEV, V.A.

Possibility of burning silica clinkers on a firing grate. Izv.vys.-ucheb.zav.;khim.i khim.tekh. 4 no.4:643-646 '61. (MIRA 15:1)

1. Ural'skiy politekhnicheskiy institut imeni Kirova, kafedra tekhnologii tsementa.

(Silica) (Cement)

CHEBUKOV, M.F., kand.tekhn.nauk; YEGOROVA, A.M., inzh.

Lowering the deformation susceptibility of nonautoclaved cellular fly ash concrete by introducing porous aggregates into their composition. Stroi. mat. 8 no.5:35-37 My '62. (MIRA 15:7)
(Lightweight concrete)

CHEBUKOV, M.F., kand.tekhn.nauk; KORYAKOV, I.F., kand.tekhn.nauk

Obtaining agloporite from raw material from the Urals and making lightweight concrete of it. Sbor.trud.VNIINSM no.6: 38-55 '62. (MIRA 15:12)

1. Ural'skiy politekhnicheskiy institut.
(Ash (Technology)) (Lightweight concrete)

CHEBUKOV, M.F.; DOLINSKAYA, N.G.; TUNGUSKOVA, E.A.

Study of the chemical stability of mortars and concretes made with siliceous cements. Trudy Ural. politekh. inst. no.118:44-51 '62. (MIRA 16:6)

(Mortar—Testing)
(Concrete—Testing)

CHEBUKOV, M.F., kand.tekhn.nauk; TIKHOMIROVA, M.F., inzh.

Using lime ash binding material for producing concrete and reinforced concrete. Bet.i zhel.-bet. 9 no.12:551-554 D '63. (MIRA 17:2)

CHEBUKOV, M.F., prof.; DOLINSKAYA, N.G., inzh.

Clinker formation in highly siliceous furnace charges. TSement 30 no.4:11-13 Jl-Ag '64. (MIRA 17:11)

1. Ural'skiy politekhnicheskiy institut.

CHEBUKOV, M.F.; YEGOROVA, A.M.

Processes of hardening lime-cinder binders. Zhur. prikl. khim. 37 no.2:255-262 F '64. (MIRA 17:9)